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Material Culture and Angry Birds

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ABSTRACT
The article examines different ways in which the research of material culture is relevant for digital games. It is argued that despite the wide adoption of digital distribution, material culture still registers as a significant component of the overall gaming culture. The paper compiles a collection of different research areas relevant for the study of games and materiality. In order to better contextualize the different research approaches, the framework is applied to Angry Birds (Rovio 2009). The different approaches, ranging from platform studies and political economy to merchandizing and collecting, highlight how a seemingly small, digitally distributed mobile game still manages to connect with multiple facets of material culture in significant ways.

Keywords
Material culture, materiality, multiperspectival research, Angry Birds, mobile games

INTRODUCTION
The last decade has seen the rise of digital services, the cloud, and immaterial content. Relevant especially in vulnerable sectors such as newspaper industry, critical research focused on game industry, too, needs to pose the question: what are the consequences of this development to the material culture of digital gaming and its players? Digital games are increasingly distributed in a completely digital form. From smart phone games to free-to-play games to MMOs, digital games are available more often than not as services that sidestep physical game boxes and retail stores. However, instead of disappearing, materiality of digital games can now be discovered in new places. Peteri et al. (2013) point out how materiality of media artifacts is rarely addressed and heavily understudied. The recent dematerialization of cultural artifacts is accompanied by rhetorics that foreground techno-futuristic perspectives, hiding the mundane aspects of media production and use. Still, dematerialization does not inevitably mean less importance for materiality. Instead, new technologies also actively stimulate new material practices.

The new wave of hybrid playful products like Skylanders (Activision 2011) expands digital experiences into material realm (Tyni et al. 2013). In addition, empirical studies show that people can still have deep appreciation towards game boxes, cover art and collector's edition figurines in a time when digital games are turning to digital-only distribution (Toivonen & Sotamaa 2011). Research focused on the materiality of game culture is not restricted only to research dealing directly with games. Study on materiality in general can be in many instances extrapolated on game culture, for example in considering questions of identity and how we relate to our physical belongings.

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This paper highlights several ways in which the research of material culture is relevant for digital games. Often, it is precisely because of the perceived immateriality that the research has begun to see the actual materiality of games in more revealing light. The paper first goes over multiple strands of research on material culture. Second, a collection of different research approaches relevant for the study of games and materiality is compiled. Finally, the paper looks at Angry Birds (Rovio 2009) as a case study in order to better contextualize the different research approaches, at the same time illustrating the surprisingly material nature of this digital hit game. Thus, we aim the paper to serve as an outline that will hopefully spark further discussion and more advanced models from future research.

RESEARCHING MATERIAL CULTURE

Recent years have seen researchers among and on the borders of game studies cast renewed interest on the materiality of game culture. Apperley and Jayemane (2012) go over the central threads of the so called "material turn". They identify three research areas that focus on the materiality of game culture in different ways. First, the *ethnographic line of research* examines player-users using games as content for their social and participatory media behavior. Offline affects online gaming in many ways and material elements are used for example to help digital gameplay in various manners. MMO communities might produce loads of out-of-game material that is referenced and serves to support the feeling of community. The physical place of play affects the game experience depending on whether it happens in a net-café or at home. Access to gaming is restricted by the expenses of hardware, online connection and electricity as well as access to a credit card.

Second, *platform studies* (Montfort & Bogost 2009) focuses on how the materiality of the gaming platform affects the design and the play of games. The research shifts away from peoples' relationship with software, towards the relationship of software and platform. While people can tamper with this relationship, it remains as the constant for the study. Thus, the focus can be on how the manufacturing of particular microchips (possible assembly line difficulties; gambling on a lucrative deal, etc.) might spell the end or success of an entire game console. This way platform studies form a flexible method, a bridge of sorts, for examining the connections between corporate leadership and game design. Platform studies can also be combined for example with media archeology (Huhtamo & Parikka ed. 2011), as researching the intricacies of past console productions can offer insight on larger industry trajectories. The third research trend focuses on the *political economy of game industry* (for example Kline et al. 2003; Kücklich 2005; Dyer-Witheford & De Peuter 2009). The focus is turned on the real-world relationships of work and play in the contemporary society. Fan labour, for example, is seen as a problematized area, i.e. whether game modding is work or fun in circumstances where fans do not keep any IP rights, despite carrying all the risks. The excruciating crunch times in game development fall on the same line of critical examination.

The tripartite review of Apperley & Jaymane nicely highlights the many linkages between digital games and materiality. At the same time, we feel that the rich tradition of material culture studies is still not utilized to its full potential. While the advantages of applying science and technology studies (STS) or actor-network theory (ANT) in revealing the socio-technological basis of digital games have been discussed to some extent (Giddings 2005; Kerr 2006; Taylor 2006), the conceptualizations within the study of material culture that can help us unfold the everyday function and meanings associated with digital games remain heavily underused.

Russell W. Belk (1988), who has studied the many meanings of possession for decades, describes thoroughly how we unknowingly feel our belongings to be a part of our 'selves'. His central concept is the 'extended self' by which he means five categories, or layers, of the things we consider to be a part of ourselves. The layers start from our body, continue to our internal processes, ideas and experiences, finally stopping to 'the people, places, and things' towards which we hold a special relationship. Thus we feel everything that we describe as 'mine' to be part of us (my car, my dad, my name, etc.). Belk (1988) also goes over 'special cases' such as collections, which allow us to achieve a self-defined uniqueness within set boundaries. Both the things themselves and the order that is imposed on them reflect the collector's identity. Controlling the miniature world of the collection feels good, as filling the holes in it means "completing" areas of the collector herself. Belk's ideas have an immediate connection to game collections and other fan materials. Storing, organizing, and putting games on display can have an important role in creating a particular gamer identity, gathering subcultural capital, and ensuring the opportunity for reminiscing past gaming experiences (Toivonen & Sotamaa 2011).

Perhaps most importantly, though, Belk's conception reminds us how media in general and digital games in particular should not be reduced to "'mere' contents but manifest themselves also as artefacts that can be owned, collected and placed in the home" (Peteri et al. 2013). Concentrating on the material aspects and the "performance" of gaming at home, Enevold (2012) argues that situating computers and consoles at home is revealed relating to parenting, sharing among siblings and everyday life in nuanced ways. The time-space of gaming "is regulated in an automatic and routinized way, and motivated and ruled by a range of norms, explicit and implicit" (ibid., pp.4). Such regulations and norms intertwine with sleep, work and family-life, and concern now both gaming children and parents.

Anthropologist Daniel Miller (2010) asserts that our fundamental materiality is the best way to understand us. Our relationship to objects is dialectic: we make objects and objects make us. Miller argues that we are constructed out of objects and appearances, such as our clothing. Objects are not important because they are everywhere to be seen or because they physically enable or restrict us. They are important precisely because we do not see them, notice them. As objects are taken more and more for granted, they increase in their power to control our behavior through setting various frames for us. Furthermore, at this taken-for-granted phase they are not open for contestation. If something is present everywhere – Miller uses blue jeans as an example –, they become *less* interesting to us, not more, while at the same time we are increasingly blinded to their characteristics in setting a certain kind of culture. Applying these perspectives to the study of games challenges us to explore how games are not only raw material for identity building but also actively impose their own dynamics on their players.

Bart Simon (2007) points out how gaming experience is crucially connected to the material pleasures of embodied practice. While the futuristic game industry rhetorics may foreground the processes of dematerialization and virtualization, for the players the very machines that enable and facilitate playful behaviors become "material instantiations or enhancements of the gaming experience" (ibid., p. 188). Similarly, an earlier study conducted by one of the authors showed that game cartridges, discs, and boxes can operate as important carriers and mediators that provide game cultural value that surpasses the passing gaming instances (Toivonen& Sotamaa 2011).

DIFFERENT RESEARCH APPROACHES

In the following, we introduce a selected collection of research approaches that we find most relevant for the study of games and materiality. Similar to a handful of prior studies (Kline et al. 2003; Consalvo & Dutton 2006; Sotamaa 2009), we call for radically multiperspectival research approaches. Our aim is not to list all possible research approaches or make a timeless classification of potential objects of study. Instead, the applicability of different approaches needs always to be evaluated in connection to the particular cases. We see the following as an outline that will hopefully give way to more sophisticated models and approaches in the years to come.

Platform

Platform studies focus on the hardware and the software of a gaming device. These are seen as central factors in shaping the look, sound and feel of the gaming device, the games designed on the system, the culture that subsequently forms around the system and reaching all the way to the business that can be conducted on it. Thus, for platform studies, both the cultures surrounding Atari 2600 (1977) and the iPhone (2006) follow same kind of principles in how the game development is dictated most of all by the hardware and the code that makes it run.

Conditions of game production

Political economy of games looks critically at the production of games and how this relates to the games, players and developers. In relation to the material aspects of digital games, it considers the actual physical consequences of manufacturing digital games, such as the conditions in which games are developed – whether this include for example overt "crunch time" – and the conditions in which the game related production materials are made, such as copper mines and cheap labour silicon factories.

Game stores and physical advertising

Even as digital distribution is becoming more and more common, marketing of digital games includes a wide variety material advertising in physical spaces. It is paramount for the game companies to consider where their product is located in larger stores in terms of electronics department, toy department, etc. or if a special section, a "store within a store", can be created (Sheff 1993). Major game launches are often accompanied by material advertising "stunts" – such as the giant mech robot at Berlin Central Station promoting *Titanfall* (Respawn Entertainment 2014) – which are aimed to create a viral Internet sensation.

Merchandising

The digital game is now one of the central components in cross-media franchising and marketing. Hit games are tried to turn into cultural phenomena that should be seen everywhere. Depending on the franchise this means everything from action figures, collectibles and plush toys to licensed soda, sweaters, backpacks and even theme parks. Following the threat of digital distribution, brick-and-mortar game stores like Gamestop have widened their product categories to include as many game related physical toys and merchandising as possible. Even if the games exist solely in the cloud, game related physical objects constantly advertise them on the streets, desks and car windows.

Collectibles and collecting

One important sector of physical game merchandising are the special collector's editions that persuade players both to buy a physical copy of the game but also to build and

showcase identity. Expensive special edition figure on the desk communicates gamer identity to self and to others. Further, physical game collections are important to many gamers who consider them both more reliable and more "owned" compared to digital copies or see game shelves as interior decoration, among various other meanings.

Fan practices outside the games

Besides using the official game materials to communicate meanings, fans recreate, remediate, transform and move digital play into new physical contexts. This might include for example cosplaying game characters, building LEGO versions of game locales, creating game related everyday objects such as knitting Space Invaders cardigans, baking game themed cakes, and so on. This is especially relevant in the age of the Internet when numerous sites and blogs are quick to spread any such fan practices that are sufficiently well made and presented.

Physical environment of play

Research on the actual physical environments in which various kinds of play happens consists of a variety of different research approaches, from architecture to anthropology. The physical play situations, be it at home, in school, or on the train, each come with their specific contexts, limitations and possibilities. Arcade, for example, was a very specific kind of environment with its possibly dark atmosphere, blinking lights and historical associations to bars and gambling. Nowadays, mapping the different smart phone play situations alone would form a formidable research data; we might for example ask where is it now appropriate to play mobile games and what kind of clashes does this cause.

Oscillation between material play and digital play

As play on many fronts seems to be becoming more digital now, it is important to examine the transition of physical play into digital with special vigor. How for example different historical forms of material play find their equivalent in modern culture: how construction toys compare to games like *SimCity* (Maxis 1989), doll houses to *The Sims* (Maxis 2000), or toy car play to *Micro Machines* games (Codemasters and others 1991-2006). Many physics based games simulate real world physics very convincingly, letting players experience games like Jenga in virtual form, whereas some action games simulate gun recoil, ricochet and bullet penetration to high fidelity.

Games combining physical and digital play

One way modern play culture tries to reconcile the chasm between traditional physical play and new modes of digital play are games that create a unified play experience out of both digital and physical elements. This could mean hybrid games like the mega franchise *Skylanders* with its RFID toyline or app toys, such as *YetYet* (Totoya Creatures 2012), where a smart device is inserted into a plush toy to turn it into a talking, reacting smart toy that can be updated. It could also mean "appcessories", apps that complement a physical play product or physical play products that complement an app.

These modern "hybrid games" are not of course the first examples of games fluctuating between material and digital play. CD-ROM and DVD board games of the 1990s were already preceded by the VCR games of the 1980s and motion based games of the mid 2000s were preceded by Nintendo's Power Glove (1987) and *Skylanders* by *R.O.B.* the robot (1986). Furthermore, various digital pets and "demanding robots" (Turkle 2011) such as Tamagochi (1996) and Furby (1998) have been hugely popular at their time.

Altogether, it appears that many popular forms of play have already for quite some time existed in the crossing point of digital and physical entertainment. In order to evaluate and contextualize the different research approaches we now move on to examine the hit game Angry Birds (Rovio 2009). This highly successful combination of mobile media and easily approachable game design provides a timely case study for analyzing the diverse materialities connected to contemporary digital games.

ANGRY BIRDS IN MATERIAL CULTURE

First released in 2009 as an iOS game, Angry Birds (AB) is now available in almost every current digital game platform including Android, Windows Phone, PC, DS, 3DS, Wii, PS3 and Xbox 360, and many others. Instead of one game, AB can now be seen as family of thematically interrelated games consists of ten different titles including *Angry Birds Seasons* (2010), *Angry Birds Rio* (2011) and *Angry Birds Star Wars* (2012), each an iteration of the original game, *Angry Birds Go!* (2013), a kart racing game, and *Angry Birds Epic* (2014), a turn based RPG battle game.

The perfect platform

While we take into account the special qualities of the various versions and platforms, it is clear that the success story of AB is near inseparable from the success of the iPhone. AB was launched during iPhone 3GS, the third generation iPhone, when Apple's high end smart phone was still new to the wide majority of consumers. Wilson et al. (2011) draw comparisons between AB and *Snake* which came pre-loaded on the early Nokia phones onwards from 1998 and how each game helped us familiarize ourselves with their respective platforms. For Wilson et al. playing AB allowed the user to "refine" her interactions with the iOS touch screen in a satisfying manner. Through play, in noticing how a small difference in aiming the sling shot equals into a big difference in the flight path of the bird, user cultivated a feel as to how sensitive the touch screen actually is. Though Steve Jobs famously did not like the iPhone to be seen as a gaming device, Wilson et al. (ibid.) posit that the precision of the touch screen controls in AB most certainly helped iOS to become a platform for games.

AB has had a key role in the process where high profile gaming on mobile phones has become a cultural phenomenon. Many smart phone games, AB included, are created in a way that they are playable in quick downtime moments in various real world environments. As Giddings (2014) writes, "[i]ts virtual time-space has evolved to nest within the crannies and hollows of players' actual time and space: in empty moments at the bus-stop, the waiting room." In turn, the demands from these new 'casual' situations and environments have meant new design restrictions, such as constructing the gameplay experience from short play bursts that keep players coming back and designing games in a way that they are playable with the sound turned off.

Downloaded roughly two billion times, AB has been one of the key products in establishing the low pricing of the game apps and a major attraction for visiting Apple's App Store. In harnessing Apple's 'Game Centre', AB helped in establishing the now-common social play networks on smart phones (Wilson et al. 2011). iOS in particular is important in how Apple retained much greater control over the software-hardware whole compared to its main competitors. "The Angry Birds game is an extremely successful example of the synthesis of personal mobile media and videogame culture", Giddings (2014) writes. "If this is the immediate environment of the Angry Bird, then its hypermediate domain is the new communication networks and ludic experiences of the smart phone, the app store, the touch screen" (ibid.). Here, the logic of platform studies as

described by Montfort and Bogost (2009) comes full circle; the design of the iPhone hardware and software spiral around each other and emerge as chief factors in setting a particular kind of landscape of affordances for new modes of design, business and play.

The material conditions and consequences of games production

Once you enter the headquarters in Rovio in Espoo, Finland, the first thing you notice is the multitude of plush toys and other AB merchandise that decorate the office space. Visit the board rooms and meeting spaces and you will find more birds and pigs painted on walls. The laidback and hip atmosphere is finished with trendy furnishing and other playful elements, including for example a large real-life slingshot. This is nothing new as such. Creating and nurturing an innovative, fun and trendy atmosphere is a life-line for many of the successful businesses in creative industries. According to Fleming (2005), the attempts to foster "cultures of fun" in workplaces began already in the 1980s. Since then things like flexible hours, relaxed dress code and funky décor have been associated with facilitating co-operation and creativity.

One of the identified pleasures of game development is the work as play ethos that is supported by playful working environments and visible for example in open attitude towards "rebellious" and quirky behavior (de Peuter & Dyer-Witheford 2005). While this management approach, grounded in actively blurring the boundaries between work and play, can both improve efficiency and contribute to work wellbeing, it also appears to fuel some cynicism. Sometimes flexibility and seemingly laidback corporate culture appears to lead to extreme hours, extended "crunch time" and very precarious positions (ibid.). While the Finnish game development scene is rarely associated with extreme working conditions, developers surely recognize the crunch promoting attitude typical of the industry (Roininen 2013).

The carefully designed studio environments are often actively displayed in company marketing materials and feature articles. At the same time, we know very little of the conditions in which for example AB merchandising products are created. While the social corporate responsibility agendas provided by publicly traded game companies provide at least some information on relationships with their suppliers (Jones, Comfort & Hillier 2013), Rovio is a privately owned company and no public documentation of its commitments is available.

One of the pros often associated with digital distribution of games is that moving away from physical discs and game cartridges automatically means a smaller ecological footprint. This claim does not take into account how the current video game industry not only relies on constantly changing hardware based on minerals mined in developing countries and produced in undesirable working conditions by cheap labour but also generates remarkable amounts of electronic waste. Added to this, contemporary mobile games rely heavily on cloud computing. While celebrated for its immaterial advantages, cloud computing still relies on brick-and-mortar data centers. These data storage infrastructures consume a tremendous amount of energy, often lack transparency and provide very limited metrics for measuring the actual environmental impact.

Retail stores and the physical marketing of digital games

For some years now, toy industry has been under great pressure by digital children's entertainment, whereas digital distribution of games has equally threatened physical game retail stores. Thus, retail welcomes brands with both material and digital presence as a shared ground, while digital business benefits from the traditional and safe appeal of

physical merchandise. Its origin as a digitally distributed download-only game meant that AB did not initially have any kind of presence in traditional gaming stores (physical advertising, stands, kiosks, and so on). This immaterial nature of the new economy might have very well contributed to the studio's resolve to come up with alternative ways of entering the traditional retail stores.

Marketing research on products and brands sees product manufacturers actually branding us, us carrying different product brands much in the same way cattle carries the brand of its owner. Much of the postmodern research on customer behavior and identity posits that one of the central ways customers construct their identity is through products (Belk 1988) and branded products in particular. Echoing Miller (2010), the products – to a degree – make us; products and brands allow us to communicate to others how we are 'gamers', 'from the streets', 'alternative' or 'rich'. One of the first major AB product categories outside the digital game were the AB plush toys. Plush toys soon became one of central ways to associate with the game, the characters and the brand in general. For many, AB plush toys became a banner of identification, a tool through which one was able to communicate the identity of an Angry Birds fan, the identity of a gamer, but also – at least first – the identity of somebody who has a smart phone.

Interestingly, AB plush toys started to come out in increasingly larger sizes, as if to reflect the ballooning size of the game phenomenon. In every turn, the smallness of the smart phone – the screen size, the length of the play sessions, the simplicity of the gameplay – was contrasted by the huge plush toys Rovio used in its official marketing situations. Further, by offering multiple sizes of the plush toys, Rovio actually facilitated a situation where fans could compete who had the biggest plush bird. This competition was only fueled by celebrities such as Conan O'Brien participating by shooting giant pigs with a giant sling in his talk show and private people creating ever more new AB themed objects. Thus, from one perspective, the studio had managed to create a situation where creating an identity was turned into a game. Subsequently its digital hit game had colonized also the physical realm.

Licensing and merchandising

Since its launch in 2009, AB has become a global merchandising phenomenon. There is an extremely wide variety of toy variants available within the AB brand, including figurines, squishy toys, board games, physical action games, and yard games. A huge number of licensees sell AB branded plush toys, soda, candy, shower gel, coffee, and backpacks, to name but a few examples. There are branded theme parks – Angry Birds Lands – located in Finland and UK, while two AB themed Space Encounter centers can be found in the United States. The birds have also been featured on F1 cars, airliner jets and as the official hockey world championship mascots. Rovio reported that in 2012 45% of its revenue came from "consumer products", a section separated from paid games, virtual goods and advertising, basically referring to merchandising and licensed goods.

The success of AB and the subsequent merchandising has led Rovio to expand its licensing efforts to ever new product lines. It now regards itself as an "entertainment company" rather than a game studio, backed by its spreading out to animation via *Angry Birds Toons* (2013) and its plans to release a feature film based on the characters in 2016. AB has been featured in various TV shows and movies both by being referenced in talk and by physical "stunts". An Israeli TV-show parodied Israeli-Palestinian peace negotiations through puppeteers moving arguing birds and pigs, while talk show host Jon Stewart echoed Conan O'Brien by hurling toy birds at piggies in his show. While it is

unclear whether Rovio participated in organizing these numbers, they certainly worked in generating viral items that were shared on popular sites. This kind of 'virality' seems to be one of the key factors for a phenomenon such as AB.

As Rovio's licencing efforts keep new AB product categories coming, sites are more and more probable to report them, gasping "where does it end" and "what do they come up with next". The amount of product categories Angry Birds has been licensed to seem to be, in itself, news worth of reporting. Rovio's intention seems to be to create advertising buzz precisely by licensing Angry Birds to as many product categories as possible, in as extravagant contexts as possible. Similar to *Pokémon* in the 1990s and Disney in previous decades (Buckingham & Shefton-Green 2004), the situation allows Rovio to harness an economy of scale with its merchandising: the more there is, the harder it is to avoid, and the more compelled or indulged one is to pursue it.

Further, and again similar to *Pokémon* (ibid.), it has become harder and harder to draw lines around the AB "source text" in terms of audience: *Angry Birds* the game was there first, yes, but by now it is easy to imagine there being new generations and segments of AB enthusiasts who have never actually played the game but nevertheless consider themselves fans. On the other hand, the exploding popularity has also meant that AB has become a very pirated brand. In a recent lawsuit Rovio was awarded 500 000€ in damages for copyright violation in regards to AB toys (GamePolitics 2014). In 2011, there was even an illegal AB theme park opened in Changsta, China.

Collectibles and fan-made artifacts

Given the downloadable and casual nature of AB, it may not to lend itself to similar extensive collector's editions as the popular AAA console titles. Nevertheless, Angry Birds Trilogy (Rovio/Housemarque 2012), a console version of the first three AB games that is available as a physical copy for various platforms, was depicted as "the ultimate collector's edition", containing "cinematics, extras and other entertaining content" (Miller 2012). A quick view on Ebay still indicates that AB collecting is mostly focused on merchandising. For example K'Nex, the provider of popular construction toy sets, offers a large series of AB figurines and items. The figures come in sealed packages which don't reveal the contents from the outside, adding a bit of mystery and excitement to the act of collecting. The collectibles exhibit the all-around marketing logic of Rovio: while the company aims at making the birds and pigs an instantly recognized and mundane part of the global media environment, they at the same time build exclusivity by providing hard-to-obtain artifacts for "true fans". In addition, as the HockeyBird collaboration with the National Hockey League (NHL) shows, the birds are also customized to particular audiences in order to push more merchandizing and collectibles to the market.

The case of Angry Birds nicely highlights the interplay between manufactured objects and fan-made artifacts that often envelopes popular media phenomena. Side by side with the official apparel we witness home-made products like knitted AB skiing caps. The recipes of the official AB cookbook are challenged by a multitude of parents-turned-into-confectioners who prepare AB birthday cakes and other delicacies in most meticulous fashion. Various custom-made bird outfits are used in marketing the game, but still the most innovative AB-inspired costumes are found among the cosplayers. In this respect, AB illustrates how the current participatory popular culture is defined by increasingly complex relations between top-down and bottom-up approaches (Jenkins 2006), importantly including the material aspects of game culture.

The physical environment of play

The most downloaded game ever and playable on almost every imaginable digital platform, AB could be attached to a huge variety of differing play situations. Everyone who owns a smart phone owns a platform for games, and game content is now targeted equally for toddlers, moms and grandmothers. Paradoxically, games like AB allow one to be always socially connected, but also work very efficiently to draw the attention of the user to these games, away from the user's surroundings.

For Parikka & Suominen (2006), the development of personal, mobile entertainment started with the railroads of the 1800s. As many were now travelling with strangers for the first time, personal media such as pocket books allowed passengers to immerse themselves, be "transported away" from the monotony and the awkwardness (ibid.). Similarly, for many, the Sony Walkman redefined both the spatial experience of the city and the sense of privacy (Bull 2000). Isolated from their surroundings by the headphones users could give new meanings to their surroundings, all the while acting as if an invisible wall was covering them (ibid.). Being immersed in the smart phone, be it talking into the phone or playing a game, continues this tradition in what Östergren & Juhlin (2006) and Belk (2013) call "accompanied solitude". Contrary to portable game consoles, the smart phone is practically always with the user. An internal game industry study on the play habits of mobile gamers, conducted by Information Solutions Group (2012), reported that mobile games are now played in various situations in everyday life. Situations like commuting on public transport, and waiting for an appointment were mentioned by over one half of the respondents, whereas 'work breaks', 'at restaurant or café', 'in class', 'at work during a meeting or conference call' and 'in a place of worship' were among listed. The most typical place for play however was at home on the couch, while over one half also reported playing in bed.

Thus, as smart phone games are now played even at church, it becomes relevant to ask in what ways the smart phone has changed the place for play. The designers of Walkman were surprised to find out that many users wanted to get as big headphones as possible – for the Japanese designers being discreet was paramount (Bull 2000) –, and in the same way we are surprised to find out that many play mobile games at home lying on couch, despite the seeming mobility of the device. The results from Information Solutions Group seem to support the view that the same kind of development is happening also with mobile gaming. It also seems that gaming in these new environments has shaped the design of the game in ways discussed in the platform section: gameplay mechanic of simple swipes with one finger allows discreet play and games need to be playable in short bursts. On the other hand, these quick sessions can pile up into long play streaks on the couch, similar to so-called hardcore games. And while many consider AB play a solitary affair, the game is played also in competitions, such as when Rovio organized an AB contest on an intercontinental Finnair flight (Mahtani 2011), demonstrating how a mobile game like AB, played on small phone screens with online connection, is still able to bring crowds of people together in various physical conditions.

The oscillation between material play and digital play

Children start to use touch devices at a younger and younger age and for many, AB is now one of the earliest games they play. Suoninen (2014) reports that AB is the most played game for all Finnish children aged 0-8 (n=921 households) and that one child out of five, aged 0-2, plays digital games at least sometimes – a significant increase in numbers compared to 2010. The study also points out that the youngest children played almost exclusively on touch devices (ibid.). Generally speaking, AB offers a great case

example on the ways the touch screen is so intuitive to use and how children first learn to use these devices. It is also interesting to consider the ways this first contact "sets a tone" on further technological (and non-technological) encounters, meaning, in what ways do the special qualities of AB build children's understanding of pictures, moving pictures, touch screen devices and a particular kind of interactivity. Should we for example consider how physical puzzle games, board games etc. are continued in tablet play and gaming? How do these kinds of fine-motoric skills (swipes, drawing on the screen, etc.) compare to earlier forms of child's play?

Lauwaert (2009) has written extensively about the development of play from the late 1800s to modern day and how old construction toy play continues in games like *SimCity* (Maxis 1989), while *The Sims* (Maxis 2000) is a digital version of a doll house. In the very core of AB are carefully modeled physics, and it could be argued that the distinct "demolish a built construction" form that AB takes has long roots in the history of play. Children have always constructed play things such as pinecone cows and sand castles, and one essential part of this kind of development through play is also demolishing things, tearing down what has been built (to examine the innards, the test one's strength, to examine one's responsibilities and the consequences of own actions, and so on). It is interesting to wonder, then, whether the gameplay mechanic of collapsing block structures captures some kind of archetypal, universal mode of play that is particularly pleasant for us. And if smart phone games help us to familiarize ourselves with these devices, do the pigs' collapsing structures teach children about physics and gravity?

Since the "casual revolution" of the early 2000s, many digital game players have changed their play habits to embrace more physical ways to play (motion and gesture control games such as Wii and Kinect) (Juul 2010). One explanation for the success of these games are their intuitive controls, understandable also to infants and elderly, and touch screen controls such as the two finger pinch have only continued this trend. Illustrating this deepening mix of the physical and digital, it is now a common occurrence to see young children trying to 'swipe' the pictures in a traditional book. On the other hand, many have also moved back to physical board gaming, as the scene has become more and more popular with a huge selection of games. It might not be such a surprise then that there is now also a physical AB game, *Angry Birds Action Game* (Tactic 2012), in which players toss birds in order to collapse wooden block structures.

Games combining physical and digital play

In September 2012, Rovio collaborated with Mattel in launching an Angry Birds 'Apptivity' toy for the AB tablet game. By placing it on the tablet screen, the toy – King Pig from AB – allows the player to open up new game modes, such as 'Material Mix-Up' in which two level materials are switched to something else, and 'Total Destruction' where players have a short period of time to use the King Pig toy to demolish the level. The Apptivity toy is a typical 'appcessory', a toy that utilizes different smart device features and affordances such as cameras, image recognition, capacitive ink and gyro sensors to facilitate play with physical pawns on and around the touch screen device.

One year later, Rovio partnered with Hasbro in creating the Telepods. Available for the tablet version of the game, Telepods are physical AB character toys which can be read by the device's camera in order to 'transport' them into the game. That is, the game recognizes the physical toy via a QR code embedded into the toy and a virtual version of the corresponding character opens up for play. Telepods are game specific and have so far been released for *Angry Birds Star Wars II* and *Angry Birds GO!*, while upcoming

Angry Birds Stella is reported to also support the toys. The logic of Telepods can be seen following both the other appcessory games and the extremely successful toy-game hybrid franchise *Skylanders* (2011), which popularized a similar transport mechanism with its ever-expanding roster of toy characters. Player-customer who wants to get the complete set needs to collect over 30 Telepods counting *Angry Birds Star Wars II* alone. Rovio is also actively expanding its character roster through new games and re-branding mechanisms, such as with *Angry Birds Star Wars*. While Telepods might not necessitate collecting a sizeable selection of characters as an integral part of its game design to a same degree as *Skylanders* and *Pokémon* do, it is important to notice that, similar to *Skylanders*, Telepod toys open up new stages for play, thus acting as a sort of physical correspondent for digital add-on content.

Discussions with Rovio indicate that Telepods are merely the first step in a longer process of refining the hybrid play experience for smart devices. The question for Rovio, too, is what the 'right kind' of hybridity is, and how could the longevity of the hybrid experience be maximized. Some researchers, like Van Campenhout et al. (2013), have argued for stepping back from the excessive dematerialization of objects and services and looking for a balanced middle way of incorporating the best of both worlds into design. Proposing new, hybrid designs for everyday objects like an MP3 player, Van Campenhout et al. (2013) see flexibility and availability as the best features of the digital world, whereas material objects are thanked for their "rich interaction", i.e. the affordances of physical manipulation and the cognitive clarity they offer. Meanwhile, Tyni et al. (2013) argue that the experience of a hybrid product consists of both digital and material characteristics. Their evaluation model builds on two axes to determine, first, how dependent the two sides of the hybrid play product, the material and the digital are of each other, and second, how synchronous or asynchronous they are.

CONCLUSIONS

In the introduction we promised to compile different research approaches relevant for the study of games and materiality. Through the exploration of Angry Birds we have tried to exemplify how these perspectives can importantly inform our understanding of how the AB phenomenon is constructed, also in very material ways. Symptomatically, Rovio's desire to highlight the Big Physical (giant plushies, the championship contest in an aeroplane etc.) seems to communicate that half of the appeal is still in the physical space, outside the screen and online networks. The diversity of Rovio's operations also effectively contests any simple conception of a modern game studio as mere software developer. The marketing logic of tying the physical toys into the larger ecosystem of hybrid media, composed of equally important elements of physical and digital components, is in the center of both the hybrid AB toys and the multimodal AB phenomenon as a whole. Discussions with Rovio employees confirm this: the company sees digital games, animation and physical merchandising as the three equally important corner stones of its enterprise. This kind of three-fold strategy helps to bring sustainability and predictability, as business is not at the mercy of the fluctuating economic situation of only one entertainment sector. In conclusion, it has to be acknowledged that a lot of the play experiences now available to us, are more or less hybrid experiences, combinations of physical and digital elements.

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